

## **CHAPTER 9 – AIR QUALITY IMPACT ANALYSIS**

### **INTRODUCTION**

Transportation conformity analyses are conducted for non-attainment areas in each of the air basins or air districts within the SCAG Region. Prior to January 1, 1977, there were three air basins and four air districts in the SCAG region. Effectively January 1, 1977, under AB 421, the Southeast Desert Air Basin (SEDAB) was divided into two new air basins: the Mojave Desert Air Basin (MDAB) and the Salton Sea Air Basin (SSAB). Effective January 1, 1977. Under AB 2666, a new air district – the Antelope Valley Air Pollution control District (AVAPCD) – was established in the desert portion of Los Angeles County. The boundaries of the air basins and the air districts in the region are illustrated in Figure 9.1 and Figure 9-2. A summary of the air basins and five districts in the SCAG region are presented as follows:

#### **Air Basins:**

1. South Coast Air Basin (SCAB) covers the urbanized portions of the Los Angeles, Orange, Riverside, and San Bernardino counties and is within the jurisdiction of the South Coast Air Quality Management District (SCAQMD).
2. The Ventura County portion of the South Central Coast Air Basin (SCCAB) covers the entire Ventura County and is within the jurisdiction of the Ventura County Air Pollution Control District (VCAPCD).
3. Mojave Desert Air Basin (MDAB) covers the desert portions of the Los Angeles, Riverside, and San Bernardino counties. A small portion of this air basin is in Kern County and outside of the SCAG region. The SCAG portion of this air basin is under the jurisdiction of three air districts including:
  - a. Mohave Desert Air Quality Management District (MDAQMD) administers portions of the MDAB situated in the San Bernardino County and eastern part of the Riverside County. The Riverside County portion is known as the Palo Verde Valley area.
  - b. South Coast Air Quality Management District (SCAQMD) administers a portion of the MDAB in Riverside County that is situated between the SSAB and the Palo Verde Valley area.
  - c. Antelope Valley Air Pollution Control District (Antelope Valley APCD) administers the Los Angeles County portion of the MDAB.
4. Salton Sea Air Basin (SSAB) covers the entire County of Imperial and the eastern desert portion of Riverside County. This air basin is under jurisdiction of two air districts including:

- a. Imperial County Air Pollution Control District (ICAPCD) administers the Imperial County portion of the SSAB.
- b. South Coast Air Quality Management District (SCAQMD) administers the Riverside County portion of the SSAB situated between SCAB and the MDAB.

## **REGIONAL EMISSIONS ANALYSIS**

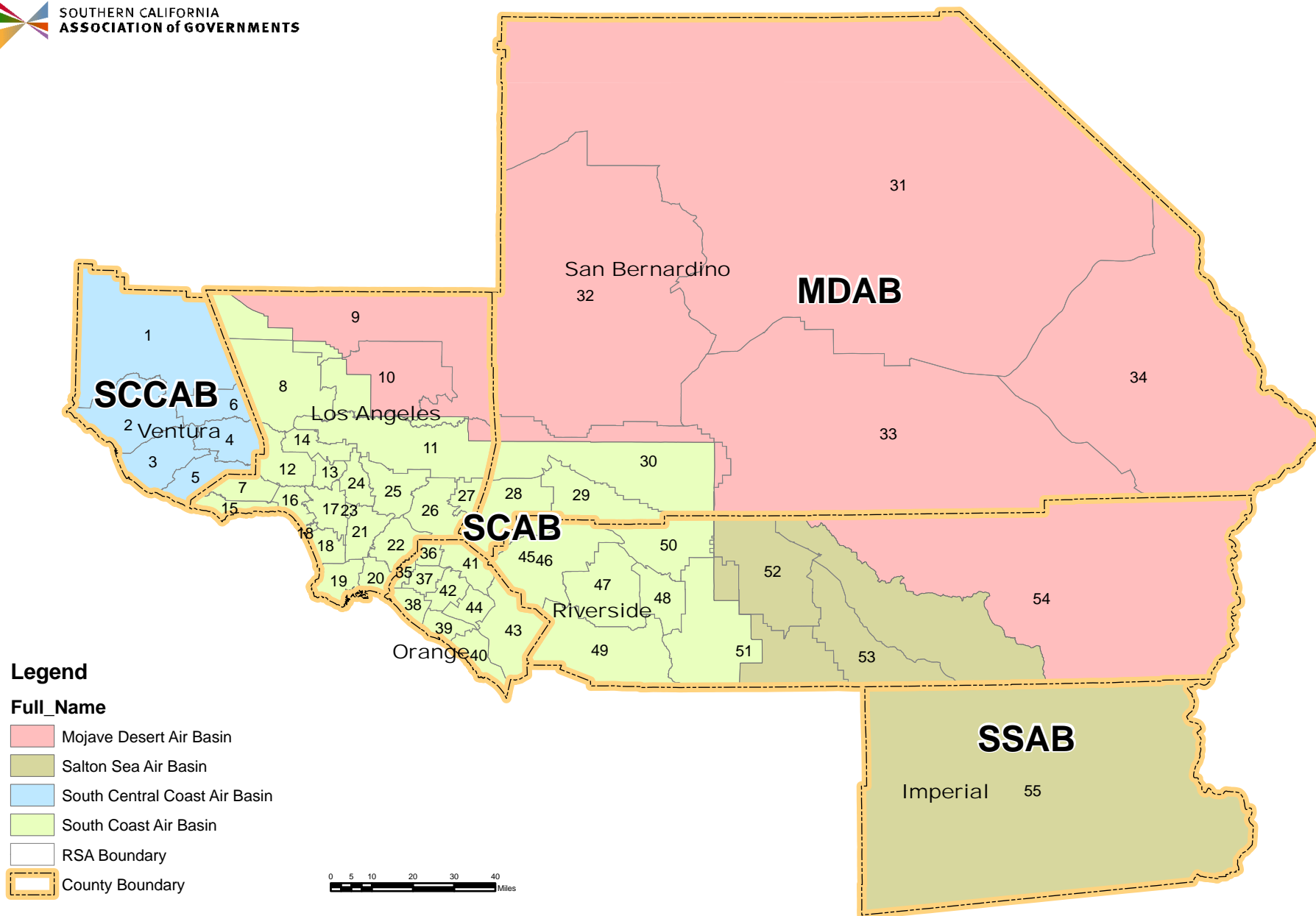
The EMFAC model developed by California Air Resources Board (ARB) is used to calculate on-road motor vehicle emissions and transportation conformity process. Emfac2007 is the most recent version of the model. In the EMFAC model, the emission rates from each of the motor vehicle types are multiplied with vehicle activity data developed from SCAG's transportation model to calculate on-road motor vehicle emissions. Pollutants include reactive organic gases (ROG), carbon monoxide (CO), nitrogen oxides (NOx), and carbon dioxide (CO2), particulate matter 10 microns or less in diameter (PM10), particulate matter 2.5 microns or less in diameter (PM2.5), lead and oxides of sulfur (SOx). Fuel consumption is also calculated although it is not a pollutant.

Type of emissions consists of exhaust emissions from running, idling or starting the engine of a vehicle. Reactive organic gases also include evaporation emissions from hot soak, resting loss, running loss, and diurnal emission from a vehicle sitting throughout the day. Particulate matters include emissions from exhaust, tire wear and brake wear.

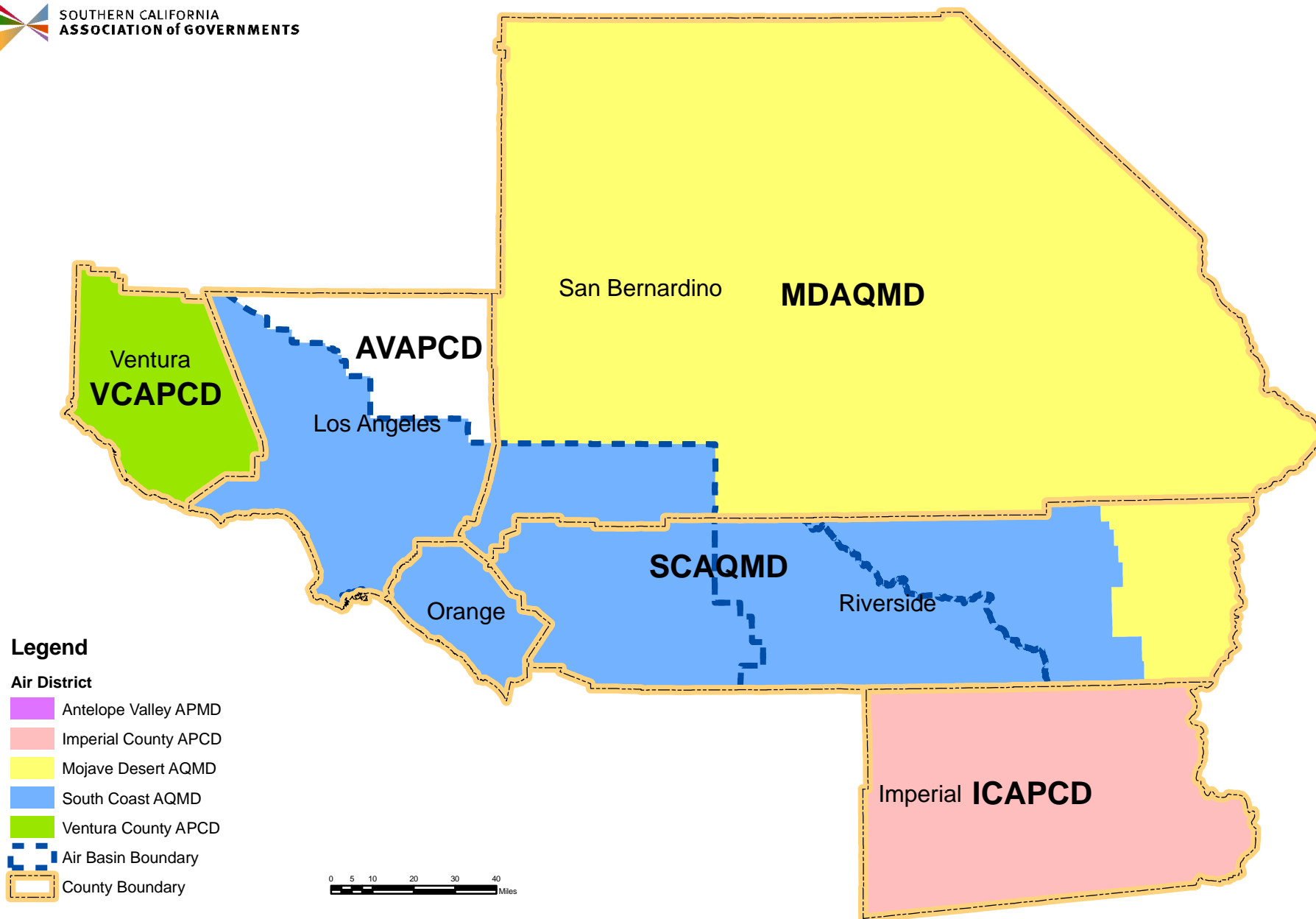
The transportation activity data used in the EMFAC model are VMT by speed ranges for light and medium-duty vehicles and heavy-duty trucks by air basins. The light and medium-duty vehicles, by ARB's definition of vehicle class, are passenger cars, light-duty trucks, medium-duty trucks, and motorcycles. The activity data are based on the following output from the transportation model:

- 1) Highway link information such as volumes, distance, and congested speed.
- 2) Intra-zonal trips, average travel time and distance.

Table 9.1 shows daily on-road motor vehicle emissions by air basin resulting from the EMFAC model run for the Year 2003. SCAG's transportation model does not include line-haul vehicles, urban buses, school buses, and motor homes. Emissions for these types of vehicles were taken from the default values of the EMFAC model and shown as "others" in the table.



**FIGURE 9-1**  
**AIR BASIN AND SUBAREAS IN SCAG REGION**



**FIGURE 9-2**  
**AIR DISTRICT IN SCAG REGION**

Table 9-1

DAILY ON-ROAD MOTOR VEHICLE EMISSIONS (EMISSIONS IN TONS/DAY)											
AIR BASIN	SUBAREA	VEHICLE TYPE	ROG	CO	NOx	CO2	PM10	PM2.5	SOx	Gasoline	Diesel
SCAB	Los Angeles	L+MDV	172.545	1,724.885	169.191	104,476.790	7.975	4.829	1.066	10,959.6	41.6
		HDT	26.548	231.257	156.536	15,195.060	5.755	5.021	0.972	441.0	1,012.0
		Other	2.046	34.314	16.998	2,162.460	0.327	0.281	0.140	61.0	145.9
		Sum	201.140	1,990.455	342.726	121,834.320	14.057	10.132	2.177	11,461.6	1,199.5
	Orange	L+MDV	48.460	484.394	50.122	33,964.160	2.562	1.513	0.348	3,544.7	17.2
		HDT	6.638	59.747	40.896	4,363.640	1.132	0.965	0.260	153.2	266.7
		Other	0.564	9.822	4.174	565.650	0.084	0.071	0.034	19.2	35.5
		Sum	55.662	553.962	95.192	38,893.450	3.777	2.550	0.642	3,717.1	319.3
	Riverside	L+MDV	25.770	269.617	25.854	15,074.260	1.176	0.718	0.162	1,574.2	15.2
		HDT	4.782	36.788	38.650	3,438.210	1.402	1.223	0.235	76.0	247.4
		Other	0.324	7.418	1.884	266.150	0.038	0.031	0.012	15.6	11.3
		Sum	30.876	313.824	66.388	18,778.630	2.616	1.972	0.408	1,665.8	273.9
	San Bernardino	L+MDV	27.615	283.570	27.437	16,361.810	1.210	0.717	0.171	1,713.2	11.0
		HDT	5.333	43.677	45.639	4,229.410	1.702	1.486	0.288	93.2	304.3
		Other	0.254	5.641	1.688	234.800	0.035	0.029	0.012	11.5	11.9
		Sum	33.203	332.888	74.764	20,826.010	2.947	2.231	0.471	1,817.8	327.3
	Total	L+MDV	274.390	2,762.466	272.605	169,877.020	12.923	7.777	1.747	17,791.7	85.0
		HDT	43.301	371.468	281.721	27,226.320	9.991	8.696	1.755	763.4	1,830.4
		Other	3.189	57.194	24.744	3,229.060	0.484	0.412	0.198	107.3	204.6
		Sum	320.881	3,191.128	579.070	200,332.410	23.397	16.885	3.698	18,662.3	2,120.0
SCCAB	Ventura	L+MDV	15.584	139.539	14.688	8,759.450			0.092	914.0	6.9
		HDT	2.336	21.319	12.462	1,271.600			0.070	53.8	70.3
		Other	0.160	4.129	0.774	117.360			0.004	8.2	4.0
		Sum	18.080	164.986	27.923	10,148.420			0.166	976.0	81.2
MDAB	Los Angeles	L+MDV	7.879	77.298	6.997	3,783.160	0.274		0.041	397.1	3.5
		HDT	1.020	7.163	6.062	536.780	0.233		0.040	11.6	39.1
		Other	0.075	1.758	0.524	67.620	0.014		0.004	3.2	3.6
		Sum	8.974	86.219	13.583	4,387.560	0.521		0.084	411.8	46.2
	Riverside/SCAQMD	L+MDV	0.671	14.605	1.286	430.940	0.035		0.005	45.6	1.0
		HDT	0.573	1.645	7.535	586.700	0.397		7.618	0.0	52.7
		Other	0.001	0.022	0.005	0.660	0.000		0.000	0.0	0.0
		Sum	1.245	16.271	8.826	1,018.300	0.433		7.623	45.6	53.8
	Riverside/MDAQMD	L+MDV	0.811	10.111	0.842	329.260	0.025		0.004	34.7	0.7
		HDT	0.490	1.764	5.862	456.630	0.302		0.040	9.9	40.5
		Other	0.012	0.187	0.043	5.470	0.001		6.916	0.2	0.3
		Sum	1.312	12.062	6.747	791.350	0.328		6.960	44.8	41.5
	San Bernardino	L+MDV	16.303	245.619	21.148	9,085.370	0.760		0.101	960.9	11.2
		HDT	5.571	24.530	66.889	5,252.590	3.322		0.453	21.5	455.6
		Other	0.146	3.844	0.962	122.720	0.025		0.007	6.3	6.1
		Sum	22.020	273.993	88.999	14,460.670	4.106		0.561	988.6	472.9
	Total	L+MDV	25.664	347.633	30.274	13,628.730	1.094		0.151	1,438.3	16.4
		HDT	7.654	35.102	86.347	6,832.700	4.254		8.151	43.0	587.9
		Other	0.233	5.811	1.534	196.470	0.040		6.927	9.7	10.0
		Sum	33.551	388.546	118.155	20,657.880	5.388		15.228	1,490.8	614.4
SSAB	Riverside	L+MDV	7.221	80.111	7.623	5,082.880	0.339		0.053	530.6	3.5
		HDT	2.992	15.408	33.413	2,634.600	1.611		0.220	20.1	220.8
		Other	0.074	1.714	0.604	72.630	0.010		0.004	3.2	4.0
		Sum	10.287	97.232	41.640	7,790.110	1.960		0.278	553.9	228.2
	Imperial	L+MDV	6.485	64.787	6.032	2,058.460	0.168		0.023	219.3	2.7
		HDT	1.379	7.903	13.720	1,094.780	0.638		0.094	5.3	94.7
		Other	0.109	1.742	0.244	29.190	0.006		0.001	1.8	1.3
		Sum	7.972	74.431	19.996	3,182.430	0.812		0.119	226.3	98.7
	Total	L+MDV	13.706	144.898	13.655	7,141.340	0.508		0.076	749.9	6.2
		HDT	4.371	23.311	47.133	3,729.380	2.249		0.314	25.4	315.5
		Other	0.182	3.455	0.848	101.820	0.016		0.005	5.0	5.3
		Sum	18.259	171.664	61.636	10,972.540	2.772		0.397	780.2	326.9

## Notes:

- (1) Emissions are summer emissions except PM10 and PM2.5 are based on annual average.  
 (2) Fuel consumption of gasoline and diesel are in thousands of gallons, and VMT are in thousands.